Occupational Awareness of Asbestos
Objectives

In this course, we will discuss the following:

- Health hazards and symptoms of exposure
- Potential asbestos in the workplace
- Application of the hierarchy of controls
- Rules regarding asbestos-related work
- Finding additional resources for information
Asbestos Awareness

- **1910.1001**
  - (j)(2) Duties of employers, building and facility owners
  - (k) Housekeeping

- **1926.1101**
  - (d) Multi-employer worksites
  - (k) Housekeeping
What is Asbestos?

- Naturally occurring mineral, mined all over the world
- Long silky fibers
- Resistant to abrasion
- Inert to acid and alkaline solutions
- Stable at high temperatures
- Very high tensile strength
Types of Asbestos

- **Serpentine** (wavy)
  - Chrysotile – 95% of all asbestos in use

- **Amphibole** (straight)
  - Amosite
  - Crocidolite
  - Actinolite
  - Anthophyllite
  - Tremolite
Serpentine and Amphibole

- Crócidolite
- Amosite
- Anthophyllite
- Chrysotile
Serpentine Asbestos

- Unmilled bulk sample

Chrysotile
Amphibole Asbestos

- Unmilled bulk sample
Amphibole Asbestos

- 40x stereoscopic image

Actinolite
ACM vs. PACM

- **ACM**
  - “Asbestos-containing material,” any material containing >1% asbestos.

- **PACM**
  - “Presumed asbestos-containing material,” thermal system insulation and surfacing material found in buildings constructed no later than 1980.
Asbestos Exposure

- If the ACM can be crumbled, pulverized, or reduced to powder by hand pressure, it is known as **friable asbestos**.
  - When friable ACM is damaged or disturbed, it releases fibers into the air.
  - Airborne fibers range in size from 0.1 to 10 microns in length.
    » These are the fibers that can be inhaled.
Asbestos Exposure

- Heaviest exposure occurs in the construction industry during abatement, renovation, and demolition work
- Automotive brake repair and installers
- Trades encountering existing asbestos during repairs or renovation
- Firefighters
- Demolition workers, drywall removers
- Asbestos removal contractors
How Asbestos Affects the Body

- Exposure to airborne friable asbestos may result in a potential health risk because persons breathing the air may breathe in asbestos fibers.
Asbestos Related Diseases

- **Asbestosis**
  - Chronic lung ailment caused by a build-up of scar tissue inside the lungs

- **Mesothelioma**
  - An asbestos caused cancer of the chest cavity lining or abdominal cavity

- **Other cancers**
  - Lung, esophagus, stomach, colon and pancreas
Symptoms

Symptoms which may indicate an exam is needed:

- Shortness of breath
- A cough or a change in cough pattern
- Blood in the sputum coughed up from the lungs
- Pain in the chest or abdomen
- Difficulty in swallowing
- Prolonged hoarseness
- Significant weight loss
Definitions

- **Authorized person**
  - Authorized by employer and required to be in work area

- **Regulated area**
  - Established by employer to demarcate areas of concentrations of asbestos that exceed or may exceed PELs

1910.1001(b) and 1926.1101(b)
Uses of Asbestos

- ACM can be classified into one of three types:
  - **Spray-on**: used on ceilings or walls
  - **Thermal system insulation (TSI)**: wrap on boilers, pipes and ducts
  - **Miscellaneous**: floor tile, ceiling tile, gaskets, curtains, roofing material, siding, tar, mastics, wiring, etc.
Where is Asbestos Found?

- Carpet replacement
- Lab renovation
Textured ACM Ceiling
Ductwork
Spray-On Coating
Lab Equipment
Flooring
Abatement
Disposal
Hierarchy of Controls

- Engineering controls
- Work practices controls
- PPE
- Administrative controls
Engineering Controls

- Negative pressure enclosure HEPA vacuum systems
  - Glove bags
  - Glove boxes

- Local exhaust ventilation on dust producing power tools
  - Saws
  - Drills
Engineering Controls

Asbestos Brake

Asbestos-Free
Work Practice Controls

- KEEP IT WET!
- Promptly clean up and dispose of asbestos containing waste.
- Do NOT use compressed air or high speed disk saws.
- Do NOT dry sweep asbestos dust.
- No employee rotation to reduce TWAs.
Why are these incorrect practices?
Does this abatement look correct?
Personal Protective Equipment

- Respiratory protection and clothing
  - Regulated areas
  - Construction Class I, II, and III
  - Above the permissible exposure level and action level
Personal Protective Equipment

- When a respirator is required, the employer must comply with:
## Respiratory Protection

<table>
<thead>
<tr>
<th>Fiber/CC</th>
<th>Condition</th>
<th>Respirator</th>
</tr>
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<tbody>
<tr>
<td>≤ 1</td>
<td>≤ 10 x PEL</td>
<td>Half Face APR w/HEPA</td>
</tr>
<tr>
<td>≤ 5</td>
<td>≤ 50 x PEL</td>
<td>Full Face (FF) APR w/HEPA</td>
</tr>
<tr>
<td>≤ 100</td>
<td>≤ 1000 x PEL</td>
<td>FF PAPR w/HEPA - or Supplied Air (SA) Continuous Mode</td>
</tr>
<tr>
<td>≤ 100</td>
<td>≤ 1000 x PEL</td>
<td>FF SA Pressure Demand (PD)</td>
</tr>
<tr>
<td>&gt; 100</td>
<td>&gt; 10,000 x PEL</td>
<td>FF SA PD SCBA</td>
</tr>
</tbody>
</table>
Administrative Controls

- Asbestos exposure assessment
- Medical surveillance
- Competent person supervision
- Signs, labels and demarcation
- Training of employees
- Communication between employer, employee, and facility owner
Required Documentation

- Objective exposure data (while using)
- Exposure measurements (+ 30 years)
- Training records (+ 1 year)
- Data to rebut PACM (while using)
- Information on locations of ACM transfer with ownership
Responsibility

- **Multi-employer worksite**
  - Inform others of measures to control exposures
  - Hazards abated by contractor who created
  - Adjacent employer WILL check containment
  - GC requires compliance

- **Building/facility owner**

- **Competent person**
Responsibility to Communicate

- Know where asbestos is located
- Recognize asbestos and assess its condition
  » ACM  PACM  TSI
- Avoid producing asbestos dust
- Avoid breathing asbestos fibers
- Know and comply with the OSH rules
  » 1910.1001  1926.1101
- Respond properly to fiber release episodes
Additional Information

- **N.C. Department of Labor**
  - Consultative Services: (919) 807-2899
  - Education, Training and Technical Assistance: (919) 807-2875

- **NIOSH**
  - 1-800-35-NIOSH
  - http://www.cdc.gov/niosh

- **N.C. Health Hazards Control Unit**
  - (919) 707-5950
Summary

In this course, we discussed:

- Health hazards and symptoms of exposure to asbestos
- How to identify potential asbestos in the workplace
- The hierarchy of controls
- Identification of asbestos standards
- Additional asbestos resources
Thank You For Attending!

Final Questions?
Handouts

- **COMMON QUESTIONS**: Asbestos Hazard Management Program Health Hazards Control Unit - NC DHHS

- **NC DOL Industry Alert**: NCDOL Expands Health Emphasis Program

- **NIOSH CURRENT INTELLIGENCE BULLETIN**: Asbestos Fibers and Other Elongated Mineral Particles: State of the Science and Roadmap for Research – NIOSH DHHS and CDC (National Institute for Occupational Safety and Health)